

Basic Laboratory Skills

Laboratory skills are a very important part of chemistry, some will say that “wet chemistry” is the most important aspect of chemistry. Knowing how to properly and safely carry out experiments is the first part of being successful in experiment implementation.

Purpose:

- 1) To become familiar with accurately dispensing volumes of liquid into a graduated cylinder.
- 2) Know how to light a Bunsen burner and boil a liquid.

Part I: Using a graduated cylinder

1. Using a funnel in your 25ml or 50ml graduated cylinder you will add 25ml of solution “A” to the graduated cylinder.
2. First place the funnel in the graduated cylinder and place the graduated cylinder on a flat surface.
3. Carefully pour 20ml of the solution into the graduated cylinder and then add the remaining 5ml drop wise with a plastic dropper until the meniscus is at the 25ml mark.
4. Using the 10ml graduated cylinder and a plastic dropper add 4.5ml of solution “B” to the 10ml graduated cylinder.
5. Take both solutions back to your lab bench.
6. ALWAYS add acid to water NEVER water to acid.
7. Pour the 25ml of solution “A” into a 150ml or 250ml beaker.

Part II: Weighing out solids

1. Place a weigh boat on the scale and zero/ tare it out. The scale should read “0.0g”
2. Using the scoopula remove 2.0g of NaHCO_3 into the weigh boat.
3. Replace the lid to the NaHCO_3 container and return to your lab bench.

Part III: Lighting a Bunsen burner

1. Make sure gas valve is completely perpendicular to nozzle and ensure that Bunsen burner tubing is not cracked, damaged or kinked.
2. Turn gas valve so that it is parallel with gas nozzle.
3. Place flint striker over top of Bunsen burner and spark until flame is ignited. Do not let gas remain on for more than 20s while lighting.
4. Once lit adjust flame with gas/ air valve on burner or gas valve to regulate flow.
5. Each person needs to practice turning gas on, lighting burner, and turning gas off.

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Part IV: Boiling a liquid

1. Set up an iron ring stand to heat a liquid or to heat a solid
2. The iron ring should be secured to the iron ring stand about 8-12cm above the height of the Bunsen burner.
3. A piece of wire gauze should be placed on top of the iron ring
4. Place the beaker with solution "A" on the wire gauze.
5. Light the Bunsen burner
6. Use the thermometer to bring the solution to 60°C and then add the 2.0g of NaHCO_3 .
7. Continue to heat to a light boil.
8. Let solution "A" boil for 60s then turn the Bunsen burner off.
9. Use your beaker tongs to take the hot beaker off the iron ring set up and set on your lab bench. If you need to use two (2) hands with the beaker tongs. Make sure you are careful because the contents of the beaker are very hot.
10. Add the 4.5ml of solution "B" to the hot solution "A."
11. Record any observations
12. after 120s dispose of everything in the beaker in the sink with the water running.
13. Clean all of your glass wear and put everything away.

Analysis/ Post Lab Questions:

1. What are three (3) issues that can go wrong when measuring liquids into a graduated cylinder?
2. When using a scale to mass out solids what are the steps to do so?
3. When using the Bunsen burner what should you make sure is in good conditions?
4. What did you find most difficult when lighting a Bunsen burner.
5. You should always add _____ to water and not water to _____.
6. When moving a beaker with hot liquid in it, what tool should you use? How should you use it to be safe?

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